AMENDMENTS TO THE CLAIMS:

Please cancel claims 9-12 without prejudice or disclaimer.

1. (Currently amended) A method of producing an optical waveguide comprising ~~steps of~~:

forming ~~preparing~~ an optical member for use in optical transmission; and

emitting leakage light from said optical member to cure ~~to its surroundings; and curing~~ a photo-curable resin on a surface of said optical member, said cured photo-curable resin being deposited on said surface and having a lower refractive index ~~after curing~~ than a refractive index of an outer circumference of said optical member ~~by using said leakage light to thereby deposit the cured photo-curable resin on a surface of said optical member~~.

2. (Currently amended) A method of producing an optical waveguide according to claim 1, wherein[[:]] said curing said ~~cured~~ photo-curable resin comprises ~~is formed by~~ curing a mixture solution of a first photo-curable resin of a low refractive index and a second photo-curable resin of a high refractive index different in curing mechanism, [[;]]

wherein said leakage light is capable of curing said first photo-curable resin but incapable of curing said second photo-curable resin;

wherein said curing said photo-curable resin ~~method~~ comprises ~~the step of~~ curing both said first photo-curable resin and said second photo-curable resin after curing said first photo-curable resin by using said leakage light; and

wherein the refractive index of at least one portion of said cured photo-curable resin decreases monotonously as the position of said cured photo-curable resin goes farther from said surface of said optical member.

3. (Currently amended) A method of producing an optical waveguide having an optical path portion of a high refractive index and a portion of a low refractive index on a surface of the optical path portion by using a mixture solution of a first photo-curable resin of a low refractive index and a second photo-curable resin of a high refractive index different in curing mechanism,

comprising:

a first photo-curing for ~~step of~~ curing said first photo-curable resin by first light irradiation capable of curing said first photo-curable resin but incapable of curing said second photo-curable resin while enclosing said second photo-curable resin in said cured first photo-curable resin to thereby form an optical path portion transparent optically;

a second photo-curing for ~~step of~~ curing said first photo-curable resin by second light irradiation capable of curing said first photo-curable resin but incapable of curing said second photo-curable resin in the same manner as said first light irradiation to thereby deposit said cured first photo-curable resin on said surface of said optical path portion after the formation of said optical path portion; and

a third photo-curing for ~~step of~~ curing said second photo-curable resin enclosed in said optical path portion and uncured residual part of said mixture solution entirely by third light irradiation capable of curing both said first photo-curable resin and said second photo-curable resin.

4. (Currently amended) A method of producing an optical waveguide according to claim 3, wherein said first light irradiation and said second light irradiation are performed simultaneously such ~~so~~ that said first photo-curable resin is cured on a side of said optical path portion while said optical path portion is formed.

5. (Original) A method of producing an optical waveguide according to claim 3, wherein said first light irradiation is applied by an optical fiber.

6. (Currently amended) A method of producing an optical waveguide having an optical path portion of a high refractive index and a portion of a low refractive index on a surface of the optical path portion by using a mixture solution of a first photo-curable resin of a low refractive index and a second photo-curable resin of a high refractive index different in curing mechanism, comprising:

a first photo-curing ~~step~~ of curing said first photo-curable resin by first light irradiation capable of curing said first photo-curable resin but incapable of curing said second photo-curable resin while enclosing said second photo-curable resin in said cured first photo-curable resin to thereby form an optical path portion transparent optically;

a second photo-curing for ~~step of~~ curing said first photo-curable resin by second light irradiation capable of curing said first photo-curable resin but incapable of curing said second photo-curable resin in the same manner as said first light irradiation to thereby deposit said cured first photo-curable resin on said surface of said optical path portion after the formation of said optical path portion; ~~and~~

~~a step of~~ extracting said portion on said surface of said optical path portion and said optical path portion made of said cured first photo-curable resin with said second photo-curable resin enclosed therein from said mixture solution; and

a third photo-curing for ~~step of~~ curing said second photo-curable resin enclosed in said optical path portion and uncured residual part of said first photo-curable resin by third light irradiation capable of curing both said first photo-curable resin and said second photo-curable resin.

7. (Currently amended) A method of producing an optical waveguide according to claim 6, wherein said first light irradiation and said second light irradiation are performed simultaneously such ~~so~~ that said first photo-curable resin is cured on a side of said optical path portion while said optical path portion is formed.

8. (Original) A method of producing an optical waveguide according to claim 6, wherein said first light irradiation is applied by an optical fiber.

9-12. (Canceled)

13. (Currently amended) A method of producing an optical waveguide having an optical path

portion of a high refractive index and a portion of a low refractive index on a surface of the optical path portion by using an optical waveguide-producing material composition ~~according to claim 9~~, comprising:

a first photo-curing for ~~step of~~ curing said radical polymerizable material by first light irradiation at said specific wavelength capable of activating said radial polymerization initiator while enclosing at least said cationic polymerizable material and said cationic polymerization initiator in said cured radical polymerizable material to thereby form an optical path portion transparent optically;

a second photo-curing for ~~step of~~ curing said radical polymerizable material on the surface of said optical path portion by continuing said first light irradiation after the formation of said optical path portion; and

a third photo-curing for ~~step of~~ curing said cationic polymerizable material enclosed in said optical path portion and uncured residual part of said composition entirely by second light irradiation capable of activating both said radial polymerization initiator and said cationic polymerization initiator.

14. (Original) A method of producing an optical waveguide according to claim 13, wherein a refractive index of the cured composition as a whole is higher by at least 0.001 than the refractive index of said cured radical polymerizable material.

15. (Original) A method of producing an optical waveguide according to claim 13, wherein said material composition for producing an optical waveguide is provided as a liquid having a viscosity of not higher than 0.1 MPa·s at 25°C.

16. (Original) A method of producing an optical waveguide according to claim 13, wherein said material composition for producing an optical waveguide further comprises a thermal polymerization initiator for initiating polymerization of said radical polymerizable material by heating.

17. (Currently amended) A method of producing an optical waveguide having an optical path portion of a high refractive index and a portion of a low refractive index on a surface of the optical path portion by using an optical waveguide-producing material composition ~~according to claim 9~~, comprising:

a first photo-curing for ~~step of~~ curing said radical polymerizable material by first light irradiation at said specific wavelength capable of activating said radial polymerization initiator while enclosing at least said cationic polymerizable material and said cationic polymerization initiator in said cured radical polymerizable material to thereby form an optical path portion transparent optically;

a second photo-curing for ~~step of~~ curing said radical polymerizable material on the surface of said optical path portion by continuing said first light irradiation after the formation of said optical path portion; ~~and~~

~~a step of~~ extracting cured part immersed in uncured part from uncured residual part of said composition; and

a third photo-curing for ~~step of~~ curing said uncured part immersed in said cured part by second light irradiation capable of activating both said radial polymerization initiator and said cationic polymerization initiator.

18. (Original) A method of producing an optical waveguide according to claim 17, wherein a refractive index of the cured composition as a whole is higher by at least 0.001 than the refractive index of said cured radical polymerizable material.

19. (Original) A method of producing an optical waveguide according to claim 17, wherein said material composition for producing an optical waveguide is provided as a liquid having a viscosity of not higher than 0.1 MPa·s at 25°C.

20. (Original) A method of producing an optical waveguide according to claim 17, wherein

said material composition for producing an optical waveguide further comprises a thermal polymerization initiator for initiating polymerization of said radical polymerizable material by heating.

21. (New) A method of producing an optical waveguide according to claim 13, wherein said optical waveguide-producing material composition comprises:

a radical polymerizable material;

a cationic polymerizable material;

a radical polymerization initiator for initiating polymerization of said radical polymerizable material by light irradiation; and

a cationic polymerization initiator for initiating polymerization of said cationic polymerizable material by light irradiation,

wherein light irradiation at a specific wavelength is effective in activating said radical polymerization initiator but ineffective in activating said cationic polymerization initiator, and

wherein a refractive index of said cured radical polymerizable material is lower than a refractive index of said cured cationic polymerizable material.

22. (New) A method of producing an optical waveguide according to claim 1, wherein said photo-curable resin is contained in a transparent vessel, and

wherein said forming said optical member and said emitting said leakage light comprise irradiating said transparent vessel with a same light.